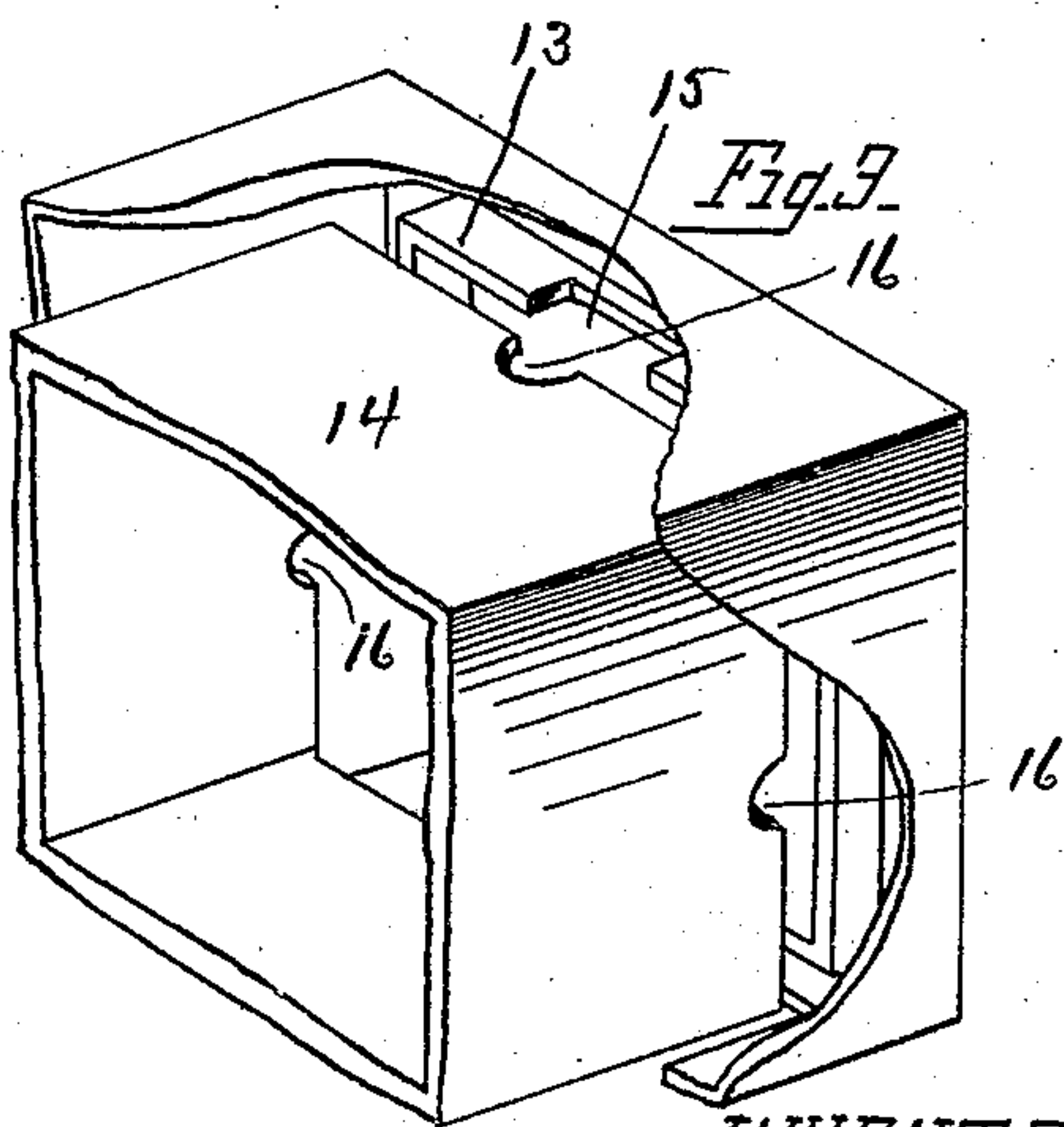
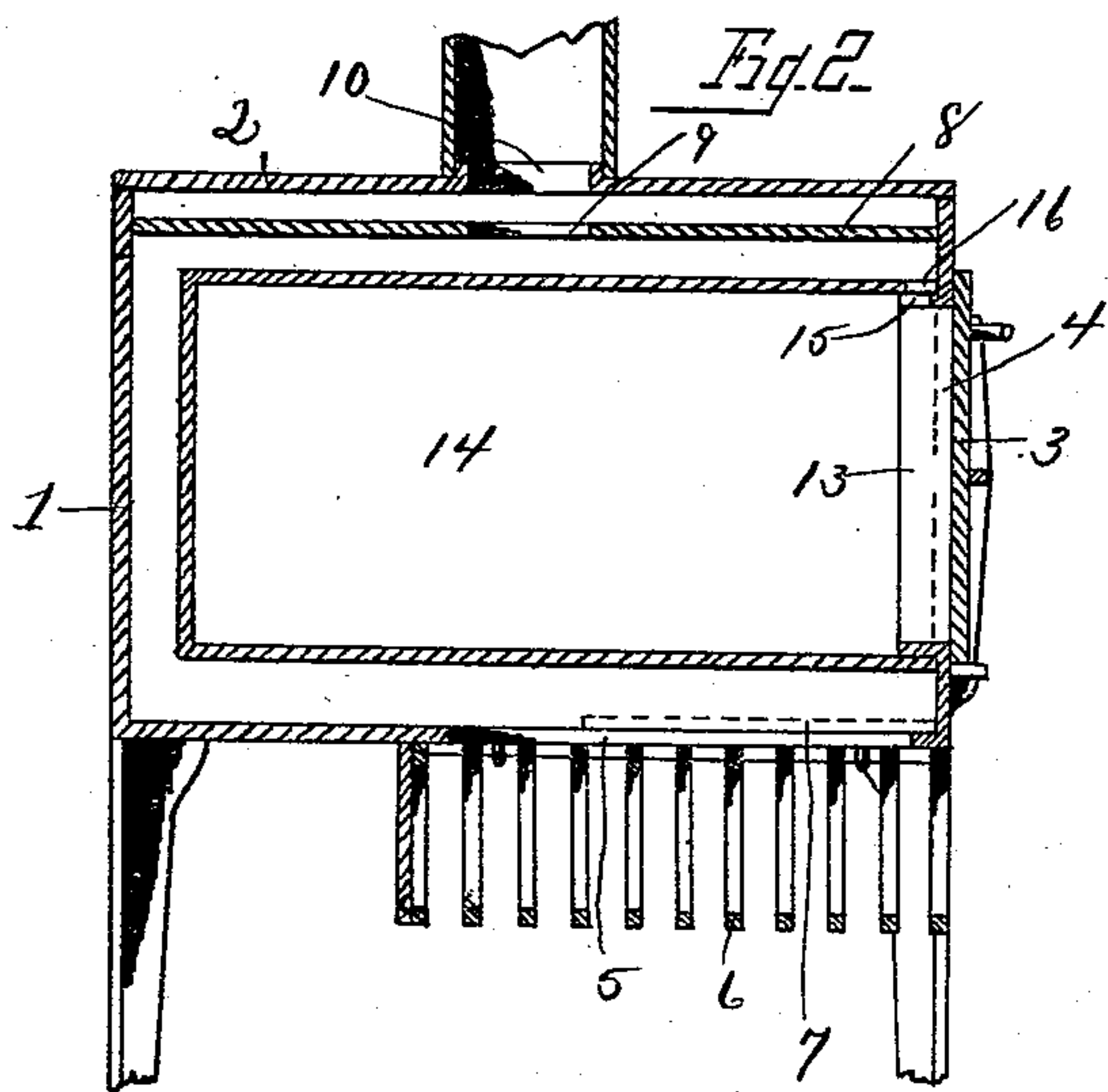
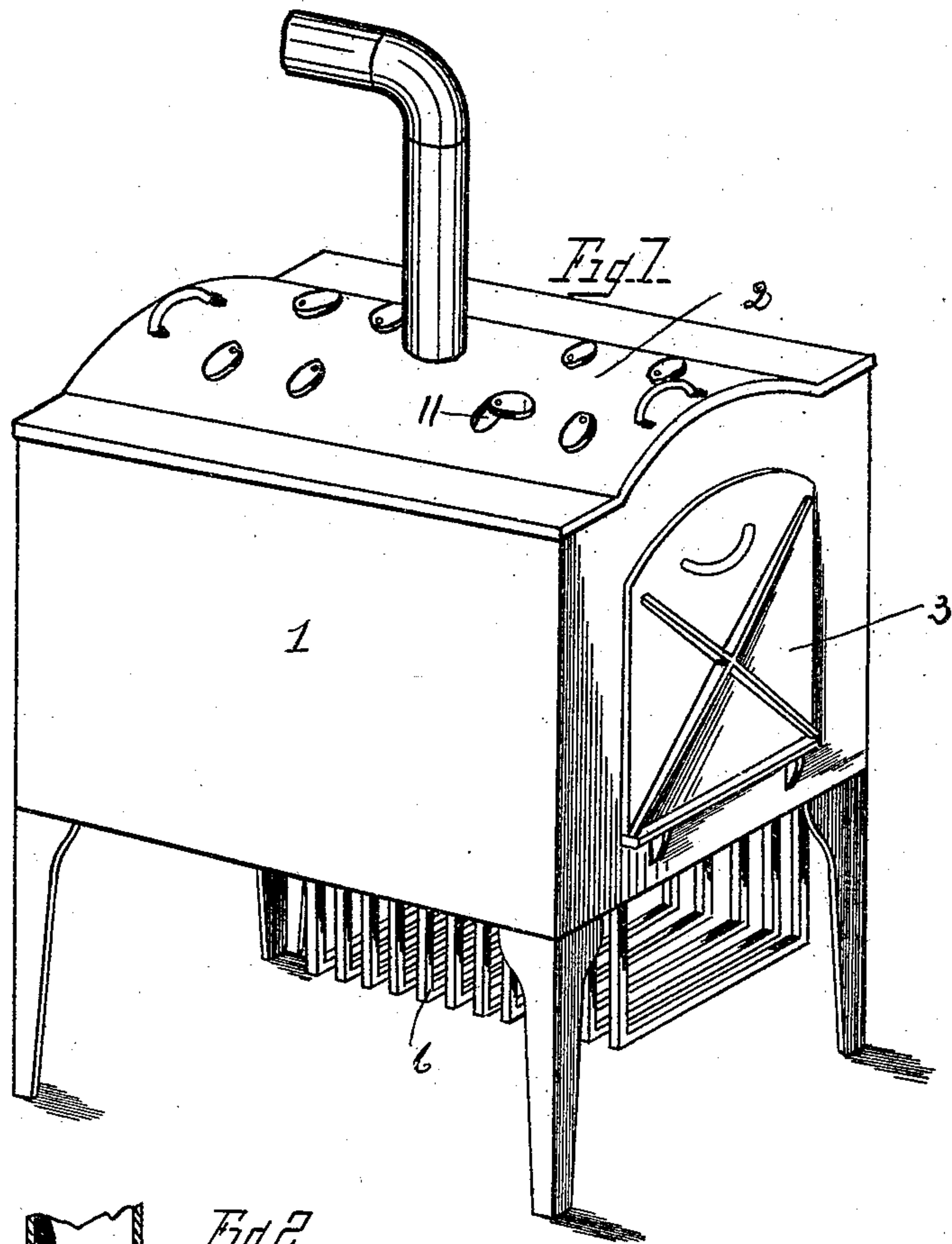


(No Model.)

T. HOELZER.  
MUFFLE KILN.

No. 490,825.

Patented Jan. 31, 1893.



WITNESSES

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# UNITED STATES PATENT OFFICE.

THEODORE HOELZER, OF TOLEDO, OHIO.

## MUFFLE-KILN.

SPECIFICATION forming part of Letters Patent No. 490,825, dated January 31, 1893.

Application filed September 29, 1892. Serial No. 447,226. (No model.)

*To all whom it may concern:*

Be it known that I, THEODORE HOELZER, of Toledo, in the county of Lucas and State of Ohio, have invented certain new and useful Improvements in Muffle-Kilns; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form part of this specification.

My invention relates to a muffle kiln, and has especial relation to kilns for firing ceramics, china and glass.

The object of the invention is first to provide a muffle and means for securing the same whereby the muffle may be conveniently removed from its fastening and turned to present a new side to the direct impingement of the products of combustion when one of the sides has been subjected to the same for a time to be affected thereby.

A further object is to provide a muffle and fastening therefor with an arrangement whereby there is means for escape of the fumes arising from the burning oils and metals in the direct draft of the furnace irrespective of the side of the muffle that may be presented to the fire.

A further object is to provide means for controlling the heat within the furnace without the employment of dampers, thereby obviating the difficulty heretofore existing of confining the smoke and unconsumed products of combustion within the furnace.

A further object is to provide for the use of solid or gaseous fuel.

The invention consists in the parts and combination of parts herein described and pointed out in the claims.

In the drawings: Figure 1 is a perspective view of a complete kiln showing the removable grate for the combustion of solid fuel in position. Fig. 2 is a longitudinal vertical section of the same taken through the center of the kiln, the front half being removed. Fig. 3 is a sectional detail showing the collar with the opening upon the upper side, and the muffle with the co-incident opening for allowing the escape of the deleterious fumes and gases within the draft to the chimney.

1 designates the casing of the kiln rectangular in cross section having a removable top 2 to allow of access to the interior of the kiln and a closure 3 to the front opening 4. Upon the underside the casing is cut away to form an opening 5 through which the products of combustion pass, and to adapt the kiln to the use of either a solid or gaseous fuel, I have provided an attachable grate 6 for the use of the former, and a removable plate 7 (shown in dotted lines Fig. 2) for use when a gaseous fuel is used, and in order that the products of combustion may be caused to revolve entirely around the inner side of the casing and impinge upon all sides of the muffle secured therein, there is a plate 8 arranged across the casing near the top, having a hole 9 (co-incident with the pipe hole 10 in the top) through which the products of combustion escape.

In order that the degrees of heat may be regulated within the kiln, and at the same time permit the complete products of combustion to pass up the pipe, there is formed in the top of the kiln a plurality of holes 11, whereby when the heat becomes too intense in the kiln one or more of the plates may be moved to uncover the hole or holes in the top and thereby destroy the vacuum draft within the kiln, and admit cold air to the top of the kiln by which means the degrees of heat may be regulated to a nicety. I regard this feature of my invention of great value, especially in the art of firing art glass, or china, as it dispenses with the use of a damper which has been heretofore employed, and produces a better finished product as in the use of the damper the incomplete products of combustion are held within the kiln and affect the gloss.

Heretofore the muffle has been constructed to withstand the direct heat of the impingement of the products of combustion upon one side only and when the bottom side has been burned, or nearly burned through the muffle has been rendered worthless and it has been necessary to replace the same with a new one.

I have provided for the use of the four sides as bottom plates to the muffle by constructing the same square in cross section, and forming a collar 13 upon the interior of the front of the kiln, the collar being square in cross section, and forming the muffle 14 of a size to closely fit over the collar whereby when the



bottom side has become weakened by the intense heat, the muffle is removed from the collar and turned to present a new side to the fire and then slipped upon the collar.

5 In order to allow the fumes from the oils and metals within the muffle to escape with the products of combustion there is formed a recess 15 in the top of the collar, and upon the ends of the four sides of the muffle, there  
10 are formed recesses 16 which co-incide with the recess in the collar without reference to the particular side that may form the top plate.

In order that the recesses in the vertical and bottom sides may be closed to allow of  
15 escape of the fumes only at the top, the collar is of a length to close the same as shown in dotted lines Fig. 2.

It will be seen that I have constructed a kiln in which there is perfect control of the  
20 heat within the same, with means for disposing of the deleterious fumes that have heretofore escaped from the muffle and kiln with means for prolonging the duration of effectiveness of the muffle by four times the length  
25 of duration of the ordinary muffle.

It will be apparent that I may form the collar and muffle rectangular, of greater area in vertical cross section than in horizontal cross section for use in firing wares of great height.  
30 In this construction however, there are but two sides to be utilized as bottom plates.

What I claim is:

1. In a muffle kiln, a casing, a muffle supported therein, means for causing combustion beneath the muffle openings in the top 35 of the casing, and movable closures for the openings.

2. In a muffle kiln, a casing having a collar upon the interior of one end, and a muffle of an area to fit thereon, the collar and muffle 40 being rectangular in cross section.

3. In a muffle kiln, a casing having a collar upon the interior of one end formed with a recess, a muffle of an area in cross section to fit upon the collar irrespectively of the side 45 that is uppermost, each side having recess formed in the end having less depth than the width of the collar except at the recess.

4. In a muffle kiln, a casing, a muffle secured thereon, the bottom plate of the casing 50 being formed with an opening, a grate detachably secured beneath the opening, for the combustion of solid fuel, and a removable plate upon the opening for the combustion of gaseous fuel. 55

In testimony that I claim the foregoing as my own I hereby affix my signature in presence of two witnesses.

THEODORE HOELZER.

Witnesses:

WILLIAM WEBSTER,  
CARROLL J. WEBSTER.